Hecla
MINING COMPANY



October 18, 1993

Mr. Arthur L. Tait
Area Manager
Beaver River Resource Area
Bureau of Land Management
365 South Main Street
Cedar City, Utah 84720



**RE: Escalante Tailings Reclamation**

Dear Mr. Tait:

In making our May 14, 1993, proposal to the Division of Oil, Gas and Mining (DOGM) for an alternate method of reclamation for the Escalante tailings impoundment, many factors were taken into consideration. The substitution of a waste rock capillary barrier in place of the clay cap made sense to us as the most important element in infiltration of precipitation through the impoundment cover was the area's arid environment. The use of a clay cap or waste rock barrier makes very little difference in the amount of moisture that will infiltrate into the tailings below the cover. However, the use of the waste rock gives the added benefit of greatly minimizing the amount of surface disturbance needed to accomplish the reclamation while offering generally equivalent environmental protection.

HELP modeling of the infiltration of moisture was conducted and included with our May 4, 1993, letter to the DOGM. This modeling demonstrates that over 98.5 percent of the precipitation will be removed from the impoundment cover by evapotranspiration and surface runoff. This leaves an average of only 0.087 inches of moisture per year to replenish the topsoil and subsoil layers of the impoundment based on your estimate of 5.8 inches per year of available moisture for soil replenishment. In addition, the majority of the rainfall during the growing season comes in the form of thunderstorms, which means that most precipitation comes in fairly intensive short bursts in which most rain runs off the surface without the opportunity to percolate into the soils. During these intense rain events, the available pore space for moisture retention readily fill-up and the infiltration rate of moisture is exceeded and the precipitation basically becomes 100% run-off. The generally high clay content of the area subsoils can be expected to have a low moisture infiltration rate which will limit the amount of water that can percolate to any significant depth into the soil before removal of the moisture by evaporation from the dry area winds and transpiration by the vegetative growth.

6500 Mineral Drive • Box C-8000 • Coeur d'Alene, Idaho 83814-1931 • 208/769-4100 • FAX 208/769-4107

BLM personnel suggested to Hecla that the determination of rooting depth was the best way to determine the maximum water penetration in the area as the rooting depth should correlate with the maximum water infiltration. Therefore, in 1990, Hecla conducted field investigations to determine the maximum rooting depth, which turned out to be approximately 14 inches. The moisture that does infiltrate into the soils during these intensive thunder storm events probably controls the rooting depth to a great degree.

We believe that 14 inches of soils, topsoil and subsoil combined, will provide the medium needed for a successful vegetative growth. The arid environment should preclude any benefits to be gained for vegetative growth by increasing the depth of the soil beyond the depth of moisture infiltration. However, to address your concern we will agree to increase the subsoil layer to 12 inches, making a total rooting medium of 18 inches, and decrease the waste rock layer to 6 inches. This is essentially the same design previously agreed upon, with the exception that 6 inches of clay will be replaced with 6 inches of waste rock.

Also, we will visually select the appropriate sized rock to be used to minimize the amount of fines that may get placed on the impoundment. We will only excavate and place the larger rock located in the pile with the intent to place as much 3 to 10 inch material on the impoundment as is possible. The waste rock is essentially non-mineralized as the mineral bearing rock was processed in the mill. If there is any metal content it would only be in trace amounts and not in concentrations that would be considered an environmental concern or threat to the vegetative growth. In addition, the HELP modeling demonstrated that there will not be significant amounts of moisture percolating down through the soils and onto the rock. This lack of water, large size of the rock, and lack of mineral content will make any significant metals leaching improbable.

Please advise as soon as possible if we have adequately addressed your concerns. We would like to get our reclamation plan approved as soon as possible so that we can begin reclamation in the spring of next year.

Very truly yours,

Gary R. Gamble

Gary R. Gamble
Environmental Supervisor

cc: Larry Drew HMC
George Wilhelm - HMC
D. Wayne Hedberg - DOGM